

CLAIMS

We claim:

1. A system for removing and replacing core I/O hardware in an operational computer comprising a system processor, the system comprising:
5 a first core I/O card and a second core I/O card, wherein each said card comprises a plurality of I/O devices providing core I/O functions associated with the system processor;
wherein at least one of the I/O devices on each said card is coupled to the system processor via a communication bus; and
10 wherein, in response to signals sent from the system processor via the communication bus, the second core I/O card performs functions performed by the first I/O card while the first I/O card is removed from its card slot and replaced.
2. The system of claim 1, including a plurality of power controllers on each said
card;
15 wherein each one of the devices on each said card is connected to a separate one of the power controllers;
wherein each one of the power controllers turns power off to a respective one of the I/O devices on the first core I/O card in response to a signal from the system processor indicating that the first I/O card is to be removed from said slot;
and
20 wherein each one of the power controllers turns power on to a respective one of the I/O devices on the first core I/O card in response to a signal from the system processor indicating that the first I/O card has been to be replaced in said slot.
3. The system of claim 2, including a manageability processor on each said card,
25 wherein the manageability processor functions as a UART console to redirect data received from the system processor via a communication bus.
4. The system of claim 1, wherein the system processor quiesces all I/O drivers associated with the first core I/O card prior to notifying the power controllers on said first core I/O card to power down the devices on said first core I/O card.
- 30 5. The system of claim 1, including means for notifying a user of the system that the first core I/O card has been powered down.

6. The system of claim 1, wherein the system processor continues to operate while the first I/O card is removed from its card slot and replaced.

7. The system of claim 1, wherein each said card includes a plurality of communication buses coupled between at least one of the devices on said card and the system processor.

8. The system of claim 7, wherein at least one of the communication buses is a PCI bus and at least one of the buses is a non-PCI bus.

9. The system of claim 1, wherein one of the devices on each said card is a LAN controller and another one of the devices is a SCSI bus controller.

10. A core I/O card for handling core I/O functions associated with a system processor, the card comprising:
a plurality of I/O devices; and
a plurality of power controllers;
wherein each one of the devices on the card is connected to a separate one of the power controllers; and
wherein at least one of the devices on the card is coupled, via a communication bus, to the system processor.

11. The core I/O card of claim 10, wherein:
each one of the power controllers turns power off to a respective one of the I/O devices on the core I/O card in response to a signal from the system processor indicating that the I/O card is to be removed from its slot; and
each one of the power controllers turns power on to a respective one of the I/O devices on the core I/O card in response to a signal from the system processor indicating that the I/O card has been to be replaced in said slot.

12. The core I/O card of claim 11, further comprising a manageability processor which functions as a UART console to redirect data received from the system processor via a communication bus.

13. The core I/O card of claim 10, further comprising a plurality of communication buses coupled between at least one of the I/O devices on said card and the system processor.

14. The core I/O card of claim 13, wherein at least one of the communication buses is a PCI bus and at least one of the buses is a non-PCI bus.

15. The system of claim 10, wherein one of the devices on each said card is a LAN controller and another one of the devices is a SCSI bus controller.

5 16. A method for removing and replacing core I/O hardware in a computer system while the computer system remains operational, wherein the computer system includes an operating system running on a system processor, the method comprising the steps of:

(a) notifying the operating system that the core I/O hardware on a first core I/O card is to be replaced;

10 (b) re-mapping I/O resources used by the system processor to a second core I/O card having said core I/O hardware identical in function to that of the first core I/O card;

(c) quiescing all I/O drivers on the first core I/O card;

(d) notifying the operating system when the first core I/O card has been replaced;

15 (e) re-starting the I/O drivers on the first core I/O card; and

(f) re-mapping the appropriate resources to the first core I/O card.

17. The method of claim 16, wherein a user of the computer system is notified when the first core I/O card is ready to be removed.

20 18. The method of claim 16, including the additional steps of: turning off power to first core I/O card between steps (c) and (d), and turning on power to first core I/O card between steps (d) and (e).

19. The method of claim 16, wherein steps (b), (c), (e) and (f) are initiated by the operating system.

25 20. The method of claim 16, wherein said core I/O hardware comprises a plurality of I/O devices on a single core I/O card.